

**ABSTRACT OF THE DISCLOSURE**

A mechanism for executing requests in a system. More specifically, a technique for processing requests to a memory system is provided. A shift register may be used to store an index associated with requests, such as read and write requests, to a memory system. Each request is stored in a respective queue depending on the source of the request and the request type (e.g. read or write). Each request includes flags which may be set to determine the processing order of the requests, such that out-of-order processing is feasible. An index corresponding to each of the requests is stored in an index shifter to facilitate the out-of-order processing of the requests. Alternatively, a shift register may be used to store each of the requests. Rather than shifting the indices to facilitate the out-of-order processing of requests, depending on the state of the corresponding request flags, the entire entry may be shifted.